AMENDMENTS TO THE CLAIMS

This listing will replace all prior versions, and listings, of claims, in the application:

Listing of Claims:

What is claimed is:

Claim 1. (canceled)

Claim 2 (currently amended) ~~Polyaminomethylenephosphonate derivatives according to the preceding claim wherein n is preferably between 2 and 15000, and each R group, being the same or different, is independently selected from the following classes:~~

~~1. $CH_2PO_3M_2$ where M may be hydrogen or an suitable cation such as alkali metal or ammonium;~~

~~2. CH_2R con R = CH_2OH; $CHOHCH_3$; $CHOHCH_2Cl$; $CHOHCH_2OH$~~

~~3. $(CH_2)_nSO_3M$ con n = 3÷4 where M may be hydrogen or a suitable cation such as alkali metal or ammonium;~~

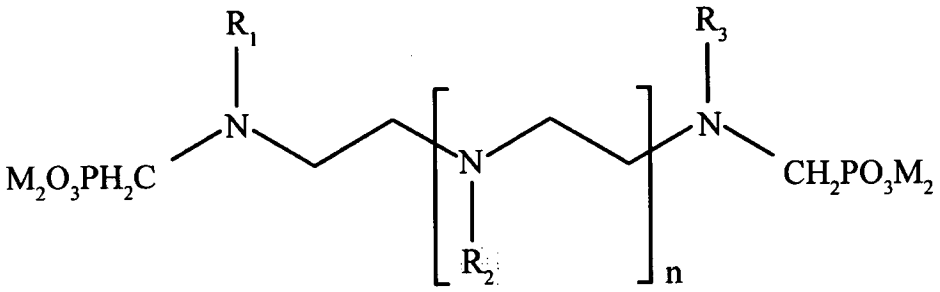
~~4. CH_2CH_2R con R = $CONH_2$, CHO, $COOR_1$, COOX, CN~~

~~con R_1 = CH_3÷C_2H_5~~

~~where X may be hydrogen or a suitable cation such as alkali metal or ammonium.~~

~~With the premise that at least one of substituent R always is different from $CH_2PO_3M_2$.~~

A scale inhibitor comprising at least one polymethylenephosphate derivative having the following formula:



wherein n is a number,

wherein M is a hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.

Claim 3 (currently amended) ~~Polyaminomethylenephosphonate derivatives~~ The scale inhibitor according to claim 2, wherein ~~also~~ at least [[on]]one of the ~~terminal $CH_2PO_3H_2$ mojeties ubstitued by one of the mojeties under the above points 1 to 4~~ $CH_2PO_3M_2$ moieties in a terminal position on the molecule is replaced by a moiety selected from the group consisting of CH_2R_4, $(CH_2)_mSO_3M$, and $CH_2CH_2R_5$.

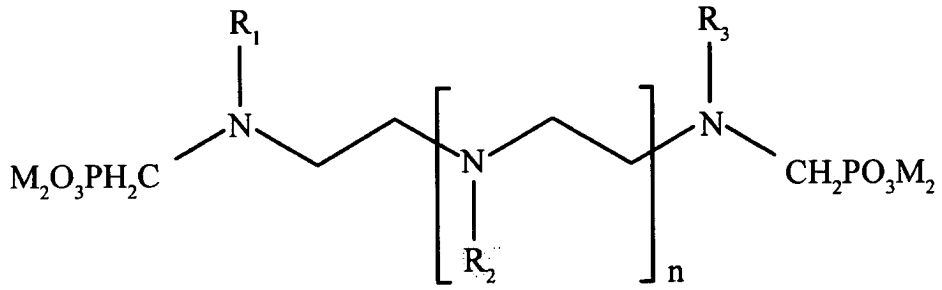
Claim 4 (currently amended) ~~Process for the preparation of the polyaminomethylenephosphonate derivative according to claims 1 or 2, comprising~~The scale inhibitor of claim 2, wherein the polyaminomethylenephosphonate derivative is produced by a process of phosphonomethylation of polyamine derivatives ~~by means of~~employing the Mannich reaction.

Claim 5 - 7 (canceled)

Claim 8 (new): The precipitation inhibitor according to claim 2, wherein n is a number in the range 2 to 15,000.

Claim 9 (new): The precipitation inhibitor according to claim 2, wherein the cation is an alkali metal or ammonium.

Claim 10 (new): A method for inhibiting scale formation in water, the method comprising the step of adding to the water a scale inhibitor comprising at least one polymethylenephosphonate derivative having the following formula:



wherein n is a number,

wherein M is hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

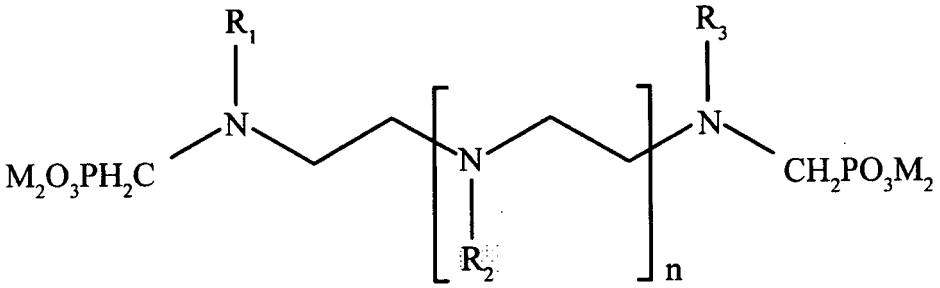
$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is a an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.

Claim 11 (new): The method according to claim 10, further comprising the step of precipitating the polymethylenephosphonate derivative on a metal surface in contact with the water, thereby preventing corrosion of the metal surface.

Claim 12 (new): A method for sequestering iron ions in a water system, the method comprising the step of providing the water in the water system with a scale inhibitor comprising at least one polymethylenephosphonate derivative having the following formula:



wherein n is a number,

wherein M is hydrogen or a cation,

wherein R_1, R_2, and R_3 are each independently selected from the group consisting of,

$CH_2PO_3M_2$,

CH_2R_4, wherein R_4 is $CHOHCH_3$, $CHOHCH_2Cl$, or $CHOHCH_2OH$,

$(CH_2)_mSO_3M$, wherein m is 3 or 4, and

$CH_2CH_2R_5$, wherein R_5 is $CONH_2$, CHO, $COOR_6$, COOX, or CN, wherein R_6 is CH_3 or C_2H_5, and wherein X is an alkali metal or ammonium, and

wherein at least one of R_1, R_2, and R_3 is not $CH_2PO_3M_2$.